



**NTSB** National Transportation Safety Board

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*Office of Railroad, Pipeline &  
Hazardous Materials Investigations*

# Human Performance

# Train 703 Operator's Performance

- Routine operations.
- Operating experience adequate.
- No drugs or alcohol.
- No use of cellular phone.



# Factors Affecting Operator Alertness

- Medical fitness.
- Low task demands and unremarkable operating environment.
- Adequacy of sleep.

# Medical Fitness

- GERD (acid reflux).
- Resultant sleep loss.
- Effects on operator alertness.



# Operating Conditions

- Low task demands.
- Unremarkable operating environment during rollback.

# Conclusion

The low task demands and unremarkable operating environment during the accident trip were conducive to the train operator becoming disengaged from some critical train operations.



# Acute Sleep Loss

- Operator needed 8 hours sleep per night.
- Received a maximum of 5 hours uninterrupted sleep.
- 2 hr sleep loss results in significant alertness and performance decrement.

# Conclusion

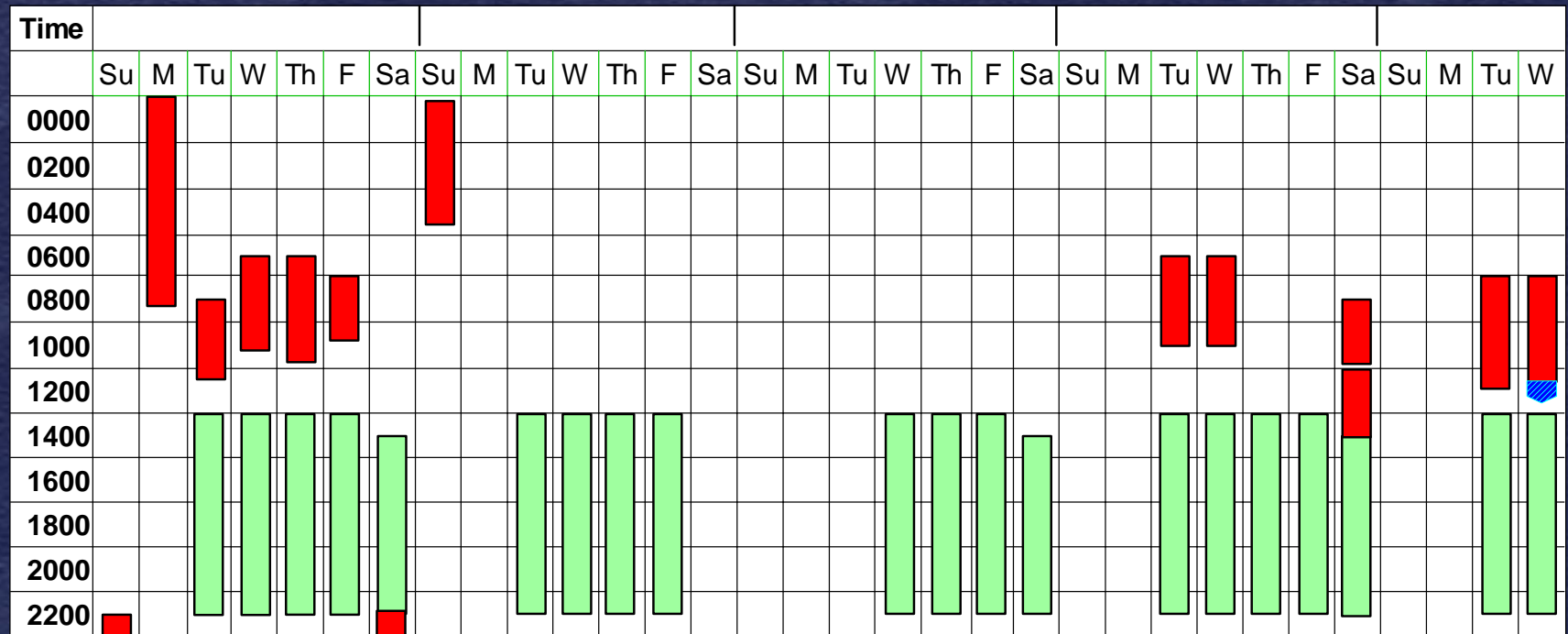
The train operator's alertness was likely reduced due to inadequate sleep.





# Opportunity for Sleep

- He had 9 hrs off duty.
- Commute time and basic needs result in less than 7 hrs to sleep.
- 8 hrs sleep, on average, is needed.

# Train Operator Work and Rest Schedule

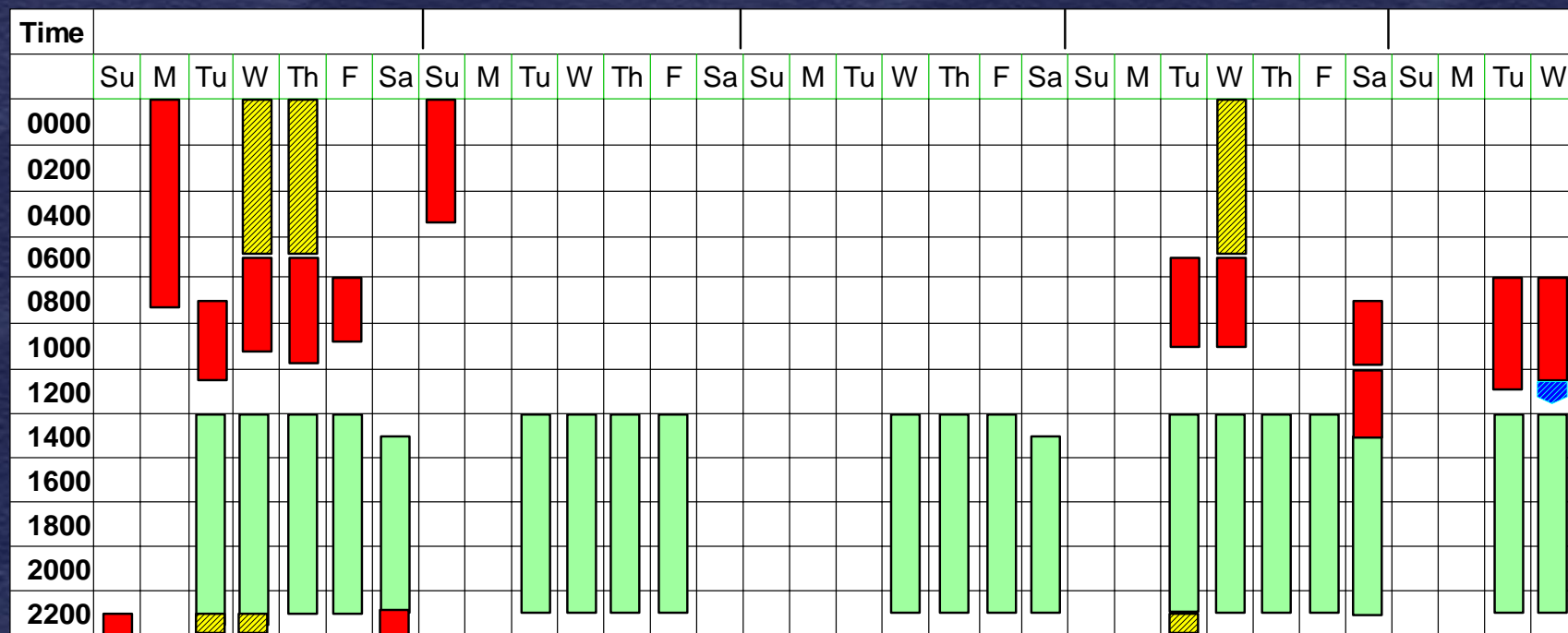


  
Overtime Shift


  
Regular Shift



# Train Operator Work and Rest Schedule



  
Overtime Shift

  
Regular Shift

  
Off Duty

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# Conclusion

WMATA's practice of allowing train operators to return to work after having as few as 8 hours off between shifts following prolonged tours of duty does not give train operators the opportunity to receive adequate sleep to be fully alert and to operate safely.



# Regulations

- FTA has no hours-of-service regulations.
- Each transit agency develops its own on-duty/off-duty policy.
- Transit industry survey.



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